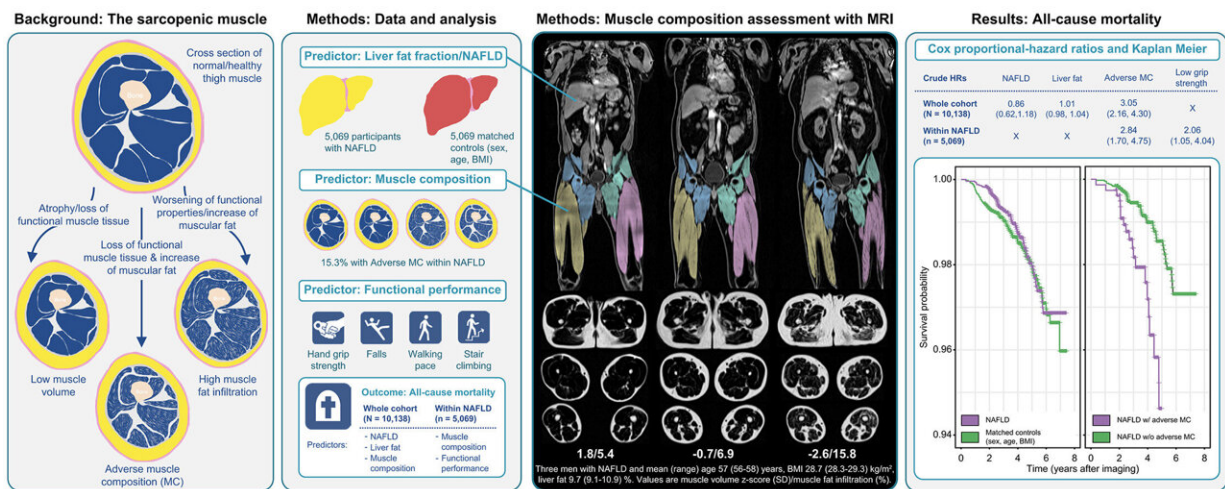


# Adverse muscle composition associated with increased mortality risk in people with fatty liver disease

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Graphical abstract. Credit: *JHEP Reports* (2022). DOI: 10.1016/j.jhepr.2022.100663

Obesity and a sedentary lifestyle contribute to an increasing number of people developing fatty liver disease. There is a need for early detection of individuals at risk of developing sequelae. According to a new study, poor muscle health may be a marker of risk for this.

The study, published in *JHEP Reports*, shows that low muscle volume in combination with high muscle fat infiltration is associated with an

increased mortality risk in people with fatty liver disease.

The liver is a storage site for energy, in the form of sugar and fat, but also for other important nutrients such as vitamins and iron. A healthy liver contains only a small amount of fat. But sometimes there is too much, and the amount of fat amassed is so large that it is called fatty liver disease. This disease can be caused by heavy alcohol consumption. However, most people with fatty liver disease are not excessive drinkers. In recent years, research has shown that obesity and type 2 diabetes are at least equally important contributors.

Globally, about one in four adults are estimated to have [non-alcoholic fatty liver disease](#) (NAFLD). Its prevalence in Sweden is probably somewhat lower, but NAFLD is already a common problem that is expected to increase as obesity becomes more prevalent.

Most people are unaware that they have a fatty liver. The challenge lies in finding the relatively few individuals with fatty liver disease that develop permanent liver damage, which could be life-threatening. Researchers are therefore trying to find methods for early identification of individuals running the highest risk of impaired liver function.

In the study, the researchers focused on participants' muscle status, as poor muscle health and function is common in lifestyle-related diseases such as obesity, type 2 diabetes and NAFLD. Poor muscle health is also associated with worse prognosis in late stages of liver disease. It is however still unclear which is the chicken, and which is the egg, i.e., whether muscle health has deteriorated due to the disease, or whether poor muscle health may precipitate the disease.

The study is based on the UK Biobank, where volunteers are scanned using magnetic resonance imaging (MRI). From the images of about 40,000 individuals, the scientists measured the amount of fat in the liver

as well as muscle [composition](#).

About 5,000 participants turned out to have NAFLD, and a low thigh muscle volume combined with high muscle fat infiltration was identified as an adverse muscle composition. In addition, the study also assessed the participants' functional performance, including hand grip strength, walking pace and ability to climb stairs.

"We found that just by looking at muscle composition we can predict which individuals with fatty liver disease are most likely to die," says Jennifer Linge, Ph.D. student at the Department of Health, Medicine and Caring Sciences (HMV) at Linköping University and a researcher at Amra Medical AB.

The association between muscle composition and mortality was not affected by whether functional performance was good or bad.

It also turned out, somewhat surprisingly, that having fatty liver disease was not associated with a worsened prognosis in the study. Although this is in line with several previous studies, the result contradicts the prevailing view that [fatty liver disease](#) is strongly associated with development of cardiovascular disease, and death.

One explanation for why studies reach different conclusions could be that many studies are based on hospital patient groups, and not the population in general, as in this case, which gives a different picture. According to the researchers, the findings of the study highlight the need for better diagnostics to identify individuals with a worse prognosis.

"We find muscle composition a very exciting component in understanding which individuals are at risk of developing serious illness, or dying. In ongoing research, we are learning more about how factors such as diet, exercise and various medicines affect muscle composition.

But it is also important to understand whether improved [muscle](#) composition affects prognosis," says Mattias Ekstedt, senior associate professor at the Department of Health, Medicine and Caring Sciences at Linköping University and consultant in gastroenterology and hepatology at the University Hospital in Linköping.

**More information:** Jennifer Linge et al, Adverse muscle composition is a significant risk factor for all-cause mortality in NAFLD, *JHEP Reports* (2022). [DOI: 10.1016/j.jhepr.2022.100663](https://doi.org/10.1016/j.jhepr.2022.100663)

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